

“ESTIMATION OF REQUIREMENT OF DAIRY PROFESSIONALS IN DAIRY SECTOR OF GUJARAT STATE FOR THE PERIOD BETWEEN YEARS 2012 TO 2020”

A. K. MAKWANA¹ & M. D. GURJAR²

¹Associate Professor, SMC College of Dairy Science, Anand Agricultural University, Anand, Gujarat, India

²Assistant Professor, SMC College of Dairy Science, Anand Agricultural University, Anand, Gujarat, India

ABSTRACT

Frequent concerns were raised on various forums over the availability and demand of trained manpower, particularly Dairy Professionals in Indian dairy sector. As a result this study was undertaken to suggest a systematic analysis of the Gujarat state dairy manpower scenario with the objectives of assessing the current employment scenario, current manpower supply scenario and estimation of the demand of Dairy professionals in Gujarat state by 2020. A questionnaire was prepared by the authors and sent to all dairy cooperative plants and other employers of Dairy professionals, all dairy science colleges in the state and their responses were obtained on main factors affecting the objectives of the study. The filled questionnaires were analysed and meaningful conclusion have been drawn. It was concluded at the end that in the period covering year 2012 to year 2020, the combined supply of dairy professionals from all the dairy science colleges of Gujarat state, will be around 175 per year, whereas the demand of dairy professionals by the dairy sector of Gujarat state would be around 112.5 per year. This indicates that supply will be more than the demand in the coming years. Such a situation may lead to lower salaries being offered at entry level, moving of dairy professionals to other states or even abroad, and in the extreme case it may lead to unemployment.

KEYWORDS: Human Resource Planning, Manpower Planning, Dairy Professionals, Dairy Education

INTRODUCTION

From a meagre milk production of 17 million MT and a per capita availability 132 gm per day in 1951, India today is the world leader in milk production with an annual production of 121.7 million MT & a per capita availability of 276 gm per day (as on March 2011). Milk consumption in India continues to rise. This rise can be attributed to the factors such as the steady growth in the population, the vegetarian nature of the population, the rise in purchasing power of the consumers, etc. The rise in income and aspiration levels have been further accelerated by the impact of the sixth pay commission in urban India and policy initiatives such as NREGA in rural India. As Indian dairy industry is preparing itself for the second white revolution in line with the National Dairy Plan (NDP) envisaged by the NDDB to increase the milk production to a level of 200 million MT by 2020-21, there is a pressing concern for making available a team of extremely good quality Dairy Professionals which can see the Indian Dairy industry through this revolutionary period and lay the foundation for achieving new heights in the Indian dairy sector.

METHODOLOGY

- The demand side analysis was done by using sampling method. The organized Dairy sector was divided into two

groups – Cooperative and private.

- The supply side analysis was done by covering the entire population (of dairy science colleges in the state) as it is small in number.
- Preparation of Questionnaires:

Questionnaires Were Prepared for the Following Four Categories of Respondents

- **Questionnaire A:** For Dairy plants
- **Questionnaire B:** For Dairy Education Institutes of Gujarat state
- **Questionnaire C :** For Government/NGO/Banks employing dairy professionals
- **Questionnaire D:** For ancillary industries employing dairy professionals
- The questionnaire for the demand side information captured information such as – *the total number of Dairy professional in the organizations, total manpower, age group, designation, experience, education qualification, academic institutes, employee turnover rate, etc.* The data collected was for the period of five years i.e. 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 and projections were made for future years up to the year 2020.
- The questionnaire for the supply side information captured information such as– *Intake capacity of institute, number of courses offered, expansion plans in the near future, etc.* The data collected was for the period of five years i.e. 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 and projections were made for future years up to the year 2020.
- Mailing the questionnaires: Questionnaires were sent to the respondents by e-mail or by post.
- After receiving the filled questionnaires they were analyzed in view of the above mentioned objectives and important findings and interpretation were summarized.

RESULTS

The number of questionnaires sent and the number of filled questionnaires received from various respondents have been shown in the table below.

Table 1: Summary of Questionnaires Sent and Received

S. No.	Type of Organization	Number of Questionnaire Sent	Number of Questionnaire Received
1	Dairy plants (Cooperatives and Private)	Cooperative: 18 Private: 13	Cooperatives: 08 Private: 02
2	Dairy education institutes	04	03
3	Government/ NGO/ Banks employing dairy professionals	16	NIL
4	Ancillary industries employing dairy professionals	05	NIL

Following Findings and results were obtained.

Distribution of Dairy and Non Dairy Professionals

From the 10 responses received from dairy plants, only 8 responses were complete in all aspects and hence they were selected for further analysis. The following table shows the average number of dairy professionals and non-dairy professionals employed in the organization, during the five year period under consideration. The average of installed capacities of these dairy plants has also been indicated.

Table 2: Average Number of Dairy and Non-Dairy Professionals in Selected Dairy Plants in During the 5 Year Period

Criteria	Plant-1	Plant-2	Plant-3	Plant-4	Plant-5	Plant-6	Plant-7	Plant-8	Average
Average Installed Capacity (in Lakh liters per day)	1	4	25	20	2	0.84	4.8	2.64	7.535
Average Number of dairy professionals	10.4	40.6	48.6	62.2	3.4	7.2	31.2	2.6	25.775 (6.0%)
Average Number of Non- dairy professionals	45.4	465.2	357.8	1007	318.6	173.6	459.8	413	405.05 (94.0%)
Average manpower during the period	55.8	505.8	406.4	1069.2	321.8	180.8	490.8	415.6	430.775 (100.0%)

Interpretation

It can be seen that on an average 6% of total manpower in dairy plant are “dairy professionals” whereas 94% are having non-dairy educational qualification.

Work-Area Wise Distribution of Dairy Professionals

Considering the average (five year average) number of dairy professionals employed in the plants mentioned in row 3 of table 2 above, the percentage of dairy profession employed in various work areas viz. Production, Chilling centers, Quality control, Marketing, Administrative, Management Information System (MIS), Housekeeping, and other department were determined, and the results are shown in table number 3 below.

Table 3: Average Number of Dairy Professionals in the Selected Dairy Plants in Different Work-Areas

Work Area	Plant-1	Plant-2	Plant-3	Plant-4	Plant-5	Plant-6	Plant-7	Plant-8	Average %
Production	5.2 (50%)	26.4 (65%)	39 (80%)	57.2 (92%)	3.4 (10%)	6 (83%)	25.8 (83%)	2.6 (100%)	82%
Chilling Centre	0 (0%)	11 (27%)	0 (0%)	4.8 (8%)	0 (0%)	0.8m (11%)	2 (6%)	0 (0%)	7%
Quality Control	1.4 (13%)	1 (2%)	3.6 (7%)	0.2 (0%)	0 (0%)	0.2 (3%)	1 (3%)	0 (0%)	4%
Marketing	1.6 (15%)	0.6 (1%)	1 (2%)	0 (0%)	0 (0%)	0.2 (3%)	2 (6%)	0 (0%)	3%
Administrative/MIS/ House keeping	1.6 (15%)	0.6 (1%)	3.6 (7%)	0 (0%)	0 (0%)	0 (0%)	0.2 (1%)	0 (0%)	3%
Other	0.6 (6%)	1 (2%)	1.4 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1%
Average no. of dairy professionals	10.4 (100%)	40.6 (100%)	48.6 (100%)	62.2 (100%)	3.4 (100%)	7.2 (100%)	31 (100%)	2.6 (100%)	100%

Interpretation

It can be seen that out of the total dairy professional employed in a dairy plant, around 82% are employed in production department. Production, chilling centres, quality control, marketing, administrative work-areas absorb almost 99% of dairy professionals in a dairy plant.

Education Qualification- Wise Distribution of Dairy Professionals

Table 4: Distribution of Dairy Professionals According to Their Education Qualifications
(Average Figures over the Period 2008 To 2012)

Work Area	Plant-1	Plant-2	Plant-3	Plant-4	Plant-5	Plant-6	Plant-7	Plant-8
Ph.D	0.6 (6%)	0.6 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Post graduates	3.4 (33%)	1 (2%)	10.4 (21%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Graduates	7.6 (73%)	38 (94%)	38.2 (79%)	62.2 (100%)	3.4 (100%)	7.2 (100%)	30.2 (97%)	2.6 (100%)
Diploma holders in DT	0 (0%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)
Total Dairy professionals	10.4 (100%)	40.6 (100%)	48.6 (100%)	62.2 (100%)	3.4 (100%)	7.2 (100%)	31.2 (100%)	2.6 (100%)

Interpretation

As shown in the above table most of the dairy professionals employed in the selected eight dairy plants have a Graduation degree in dairy science field. Graduates are recruited as trainee officers in large capacity plants.

Institute- Wise Distribution of Dairy Professionals

Table 5: Distribution of Existing Manpower (Dairy Professionals) According to Their Institute of Graduation Institute Wise Dairy Professionals (Based Upon Total Data of Five Years from 2007-08 To 2011-12)

Criteria	Plant-1	Plant-2	Plant-3	Plant-4	Plant-5	Plant-6	Plant-7	Plant-8
From SMC	47 (90%)	148 (73%)	145 (60%)	276 (85%)	15 (88%)	22 (61%)	100 (65%)	13 (100%)
From Other state	5 (10%)	55 (27%)	98 (40%)	49 (15%)	2 (12%)	14 (39%)	55 (35%)	0 (0%)
Total	52 (100%)	203 (100%)	243 (100%)	325 (100%)	17 (100%)	36 (100%)	155 (100%)	13 (100%)

Interpretation

On an average around 78 % of dairy professionals employed in the selected dairy plants have completed their studies from SMC College of Dairy Science.

Manpower Scenario of the Selected Dairy Plants Taken Together

The below given table gives an idea of the overall scenario of the selected 8 dairy plants. It indicates the total data of all the 8 dairy plants during the year 2007 to 2012.

Table 6: Scenario of Distribution of Aggregate Number of Dairy Professionals in the Selected Dairy Plants over the Period 2008 To 2012

Details	2007-08	%	2008-09	%	2009-10	%	2010-11	%	2011-12	%
Installed Plant capacity (in Lakh liters per day)	59.7		60.1		60.3		60.5		60.8	
Utilized Plant capacity (in Lakh liters per day) of 8 Plants	39.03		44.29		45.06		43.16		48.18	
(A)Total Dairy professionals	181	100 %	194	100 %	214	100 %	227	100.00 %	234	100.00 %
Ph.D	2	1%	2	1%	2	1%	0	0.00%	0	0.00%
Post graduates	11	6%	15	8%	19	9%	23	10.13%	16	6.84%
Graduates	165	91%	174	90%	190	89%	201	88.55%	215	91.88%
Diploma holders in DT	3	2%	3	2%	3	1%	3	1.32%	3	1.28%
(B) Employees other than Dairy professionals (Excluding contractual & temporary labour)	3048		3139		3229		3353		3433	
Total manpower (A+B)	3229		3333		3443		3580		3667	
Dairy professional as % of total Manpower	5.61%		5.82%		6.22%		6.34%		6.38%	
Non Dairy professionals as % of total Manpower	94%		94%		94%		94%		94%	

Interpretation

- Graduates represent maximum proportion of dairy professionals. Diploma and Doctorate holders show steady rate.
- From 2007-8 to 2010-11, the percentage of Graduates decreases and percentage of Post graduates increases.
- From last column, total 234 Dairy Professional were employed in the selected 8 dairy plants with total utilized capacity of 52.23 LLPD. Hence (234/48.18) i.e approx. 5 Dairy professional are needed per LL of Milk processed.
- The proportion of dairy professionals steadily increases with years as well as with increase in capacity.
- On an average dairy professionals represent 6 % of total employees in dairy plants

Scenario of Manpower Demand as Projected By the Selected Dairy Plants Taken Together

The following table gives the information of the total number of dairy professionals required each year by them upto the year 2020. It also indicates the educational qualification desired in the dairy professionals in the future period. The dairy plants had mentioned their future demand of dairy professionals' upto the year 2020 in the questionnaire filled by them.

**Table 7: Aggregate Demand of Dairy Professionals as Indicated by the
Eight Dairy Plants Selected for Analysis**

Details	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Expected Milk processing capacity in Lakh liters per day - For Plants In Gujarat State	52.72	64.24	66.49	68.59	76.71	78.01	80.41	84.53
Expected Milk processing capacity in Lakh liters per day - For Plants Outside Gujarat State	14	14	17	11	11	11	11	11
Total	66.72	78.24	83.49	79.59	87.71	89.01	91.41	95.53
Dairy professionals in the organization at the beginning of the year	243	254	275	292	302	316	331	343
ADD :Estimated new recruitment during the year with following qualifications	38	46	42	37	39	40	37	38
Graduates	28	41	35	31	32	34	31	32
PG	10	5	7	6	7	6	6	6
PhD	0	0	0	0	0	0	0	0
Diploma in DT	0	0	0	0	0	0	0	0
Estimated number of dairy professionals leaving the organisation including retirement	24	25	24	27	25	25	24	27
Estimated Dairy professionals at the END of the year =(B+C -D)	257	275	293	302	316	331	344	354
Estimated Non- Dairy manpower in the organization	3023	3060	3144	3227	3256	3347	3379	3470
Estimated total manpower in the organization (E + F)	3280	3335	3437	3529	3572	3678	3723	3824

Interpretation

The above table provides valuable insights into the estimates of number of dairy professionals required each year by the selected dairy plants. It can be seen that, the selected dairy plants will require around 40 dairy professionals every year and most of them will have a graduation degree. Dairy plants expect to recruit small number of dairy professionals with Post graduation degree, but there is very little demand of PhD holders and diploma holders.

Scenario of Demand of Dairy Professionals in Gujarat State for the Period 2012 To 2020

The total number of cooperative sector dairy plants in Gujarat state in the year 2012 was 19. Out of 19, 11 were categorized as small dairy plants (processing capacity 1 to 3 LLPD), 4 were categorized as medium capacity dairy plants (processing capacity 4 to 10 LLPD) and 5 were categorized as large dairy plants (processing capacity more than 10 LLPD).

The selected dairy plants had given their estimates for the future period 2012-13 to 2020 in the table No. 7. The estimations were separated by categorizing the respondent dairies into 3 categories as mentioned above. The estimations were then determined for each category i.e small, medium and large dairy plants. By carrying out this analysis, it was found that 3 small dairy plants had a combined demand of 6 dairy professionals per year (hence 11 small dairy plants would require $(3/6) * 11$ i.e.22 dairy professionals per year). Similarly 2 medium sized dairy plants had indicated a combined demand of 7.5 dairy professionals per year upto year 2020 (hence, 4 medium sized dairy plants would require $(7.5/2) * 4$ i.e 15 dairy professionals per year. Also, 2 large sized dairy plants indicated a combined demand of 21 dairy professionals per year upto 2020 (hence, 5 large size dairy plants would require approximately $(21/2)*5$ i.e.53 dairy professionals per year). This information is presented in the following table.

Table 8: Demand of Dairy Professionals per Year Upto 2020 after Interpolation in Respective Categories

A	Plant Size in Lakh Litres Per Day (LLPD)	Number of Dairy Professionals Needed Per Year by the Cooperative Dairy Plants of Gujarat State
	Small (1-3 LLPD)	22
	Medium (4-10 LLPD)	15
	Large (>10 LLPD)	53
		90
B	Number of Dairy Professionals needed Per year by – Gujarat Cooperative Milk Marketing Federation (GCMMF), IDMC, Banks, NDDB, Government, Private, Foreign firms, etc. : Assumed to be 25% of the value of ‘A’ above	22.5
C	Total Demand Per Year (A+B)	112.5 Dairy Professional Per Year

Scenario of Supply of Dairy Professionals in Gujarat State for the Period 2012 To 2020

The following table indicates the dairy science colleges situated in the state of Gujarat, the average of No. of Dairy professionals passing out each year upto the year 2020.

Table 9: Average Supply of Dairy Professionals’ Upto 2020 as Indicated by the Respondents

S. No.	Name of Institute	Average of No. of Dairy Professionals Passing Out Each Year upto 2020.
1	SMC College of Dairy Science Anand, Anand Agricultural University, Anand , Gujarat.	70
2	College of Dairy Science and Food Technology,SK Nagar, Dantiwada Agricultural University, Dantiwada, (SDAU), Gujarat	40
3	Dairy Science College, Amreli, Amreli - 365 601, Gujarat.	35
4	Mansinhbhai Institute of Dairy & Food Technology (MIDFT), Mehsana, Gujarat.	30
5	Total Supply of Dairy Professionals Per Year	175

Scenario after Matching the Demand and Supply of Dairy Professionals in Gujarat State for the Period 2012 to 2020

The demand and supply scenario of dairy professionals in the state of Gujarat for the period 2012 to 2020, has been mentioned in the table below.

Table 10: Scenario after Matching the Demand and Supply of Dairy Professionals in Gujarat State for the Period 2012 To 2020

1	Cooperative Demand Dairy Professionals Per Year	No. of Dairy Professionals	Supply Side	No. of Dairy Professionals
	Small (1-3 LLPD)	22	SMC	70
	Medium (4-10LLPD)	15	SDAU	40
	Large (>10LLPD)	53	Amreli DSC	35
		90	MDIFT	30
2	Increasing demand by 25 % - due to employment in - GCMMF, IDMC, Banks, NDDB, NDRI, Government, Private, Foreign firms, etc)	22.5		
	Total Demand Per Year	112.5	Total Supply Per Year	175

CONCLUSIONS

From the analysis of the data collected by the above mentioned survey, following important findings have been noted:-

- According to the findings made in the study, on an average 6% of total manpower in dairy plant are “dairy professionals” whereas 94% are having non-dairy educational qualification.
- Out of the total dairy professional employed in a dairy plant, around 82% are employed in production department. Further, Production, Chilling centers, Quality control, Marketing activities and Administrative work-areas absorb almost 99% of dairy professionals in a dairy plant.
- On an average around 78 % of dairy professionals employed in the selected dairy plants have completed their studies from SMC College of Dairy Science, Anand Agricultural University, Anand, Gujarat.
- Most of the dairy professionals employed in the selected eight dairy plants have a Graduation degree in dairy science field. Graduates are recruited as trainee officers in large capacity plants.
- Approximately 5 Dairy professional are needed per Lakh liter of Milk processed.
- The proportion of dairy professionals was found to be steadily increasing with increase in capacity.

It can be further concluded that in the period covering year 2012 to year 2020, the combined supply of dairy professionals from all the dairy science colleges of Gujarat state, will be around 175 per year, whereas the demand of dairy professionals by the dairy sector of Gujarat state would be around 112.5 per year. This indicates that supply will be more than the demand in the coming years. Such a situation may lead to lower salaries being offered at entry level, moving of dairy professionals to other states or even abroad, and in the extreme case it may lead to unemployment.

REFERENCES

1. Kharki, Bir Bahadur (2005), Strategic planning in co-operative sector: A study on dairy co-operatives. The Journal of Nepalese Business studies, vol. II No. 1 pp 72 -80.
2. Tewari, D. D. 2011. Wealth creation through mass capital mobilization through a cooperative enterprise model: Some lessons for transplanting the Indian experience in South Africa. African Journal of Business Management vol. 5(22), pp. 8980-8989.
3. Mathur, B. N. 2000. Dairy Education and Research-Vision for the Next Millennium. Indian Dairyman 52:39-43.
4. Pandya, A.J (2007): “Dairy Science Education and Training” Dairy India 2007, pp 417-421.
5. Desai, H.K (2007): “Imparting Quality Dairy Vidya” Dairy India 2007, pp 427-428.
6. Annual report 2010-11 of NDDB

Websites

1. www.amul.com
2. www.nddb.org